CONTAMINATION PROFILE OF FUNGI AND DETECTION OF *FUSARIUM* MYCOTOXIN IN BRAZILIAN BREWING BARLEY

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Barley is a small grain cereal produced to human consumption, especially for brewing malt and beer production. The contamination with *Fusarium* ssp. and, consequently, the production of mycotoxins in this cereal is an important issue due to the health risks and quality loss of grains, therefore, causing a worldwide economic impact. For these reasons, this study evaluated the mycobiota of barley from Southern region of Brazil focusing on *Fusarium* genus isolation and the contamination of *Fusarium* toxins in 60 freshly harvested barley samples. Water activity was measured by using Aqualab equipment and fungi were isolated in DRBC agar. Mycotoxins were extracted from barley using QUECHERS analysis was conducted in LC-MS/MS for fumonisins B_1 and B_2, deoxynivalenol, nivalenol, zearalenone and "emerging" toxins (enniatins A, A_1, B, and B_1, and beauvericin). A high recovery of *Fusarium* species was obtained from barley samples, even though the water activity was about 0.543. *Alternaria* was the second genus most recovered from samples, followed by *Bipolaris*, *Nigrospora*, *Phoma*, *Cladosporium*, *Epicoccum*, *Dreschlera*, *Curvularia*, *Penicillium* and *Botrytis*. All of the analyzed samples were contaminated with at least one of the *Fusarium* toxins. We emphasize that high incidence of type B trichothecenes, zearalenone and the previously mentioned "emerging toxins" were detected. The most frequent mycotoxin detected was enniatin B (87% of the samples), followed by deoxynivalenol (68%), enniatin B1 (67%), enniatin A1 (48%), beauvericin (45%), zearalenone (30%), nivalenol (27%), enniatin A (5%) and fumonisin B1 (2%). Twenty-three percent of barley samples presented DON levels above of 1000 µg/kg, with one sample reaching 2130 µg/kg. These results highlight the importance of control strategies for *Fusarium* species and their associated toxins in cereals. Further studies are needed to evaluate the effects of processing technologies associated with the risks of consumption of multiple *Fusarium* toxins in this cereal and its by-products.

Keywords: *Fusarium*, mycobiota, mycotoxin analysis, cereals.

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